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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/015,414	12/12/2001	Tso-Hung Fan	JCLA7737	4054

7590
J.C. Patents, Inc.
4 Venture, Suite 250
Irvine, CA 92618

08/25/2003

EXAMINER

PHAM, LY D

ART UNIT	PAPER NUMBER
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2818

DATE MAILED: 08/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/015,414

Applicant(s)

FAN ET AL.

Examiner

Ly D Pham

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 July 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

FINAL ACTION

DETAILED ACTION

1. Applicants' Amendment B has been entered in Office Paper no. 8.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5 – 8 are rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention.

In claim 5, it is believed that applicants unintentionally claims a method programming, as opposed to a method of erasing (page 2 in the amendment), wherein hot electron/holes are generated to inject into the charge-trapping layer through the nitride-tunneling layer. It is understood in the art that hot carriers are injected into the charge-trapping layer to program a flash cell. That could be hot electrons or holes, and cannot be both electron/holes, as claimed. Appropriate correction is required to overcome this type of rejection.

3. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 claims the method of claim 5, wherein the first positive bias and the second positive bias are both lower than those adopted for erasing a SONOS memory having a same size

Art Unit: 2818

as the non-volatile memory with the nitride tunneling layer. It is considered unclear what exactly is the applicants trying to contrast the SONOS memory from the memory with the nitride tunneling layer when the SONOS also has a nitride tunneling layer. Appropriate clarification is required to overcome this type of rejection.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5 – 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jung et al. (US Pat 6,426,897).

Regarding **claim 5**, Jung et al. disclose a method of erasing a non-volatile memory cell using hot carrier injection method (col. 1, lines 50 – 53), the method comprising the steps of:

applying a first positive bias to the drain region (figs. 4A – 4C, 5 volts being applied to drain);

applying a second positive bias to the gate conductive layer (figs. 4A – 4C, positive voltages applied to gates);

and grounding the source region to generate hot electron holes in a channel region (figs. 4A – 4C, source region is grounded), wherein the hot electron holes are injected into the charge-trapping layer (col. 4, lines 11 – 23).

Although Jung et al. did not clearly specify the fact that the hot carriers are injected through the nitride-tunneling layer, this feature is however considered common and well known in the memory arts, wherein non-volatile/flash memory mandates a nitride layer for charge trapping purposes. Since Jung et al. did not indicate that their method be used specifically for any one particular type of non-volatile memory cell shows that the method is not limited to whether or not the non-volatile memory cell is ONO or SONOS. Therefore, it is considered obvious to one of ordinary skill in the art, at the time the invention was made to realize that the method of erasing a non-volatile memory cell as claimed is included and comprehensible by the disclosure of Jung et al.

Regarding **claim 6**, Jung et al. disclose the method of claim 5, wherein the first positive bias ranges from about 2V – 5V (figs. 4A – 4C, V_d is 5V).

Regarding **claim 7**, Jung et al. further disclose the method of claim 5, wherein the second positive bias ranges from about 2.5V – 5V (figs. 4A – 4C, V_g ranges from 3 – 7 volts).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicants are strongly suggested to review carefully all of the references cited and attached herewith for relevancies to the claimed invention.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

Art Unit: 2818

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. When responding to the office action, Applicant(s) are advised to provide the examiner with the page and line numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

9. Any inquiry concerning this communication on earlier communications from the examiner should be directed to Ly Pham, whose telephone number is 703-305-4862. The examiner can normally be reached on Monday – Friday from 8:30am to 5:00pm, alternate Friday off. The examiner's supervisor, David Nelms, can be reached at 703-308-4910. The fax number for the organization where this application or proceeding is assigned is 703-308-7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Ly Pham



August 12, 2003



HOAI HO
PRIMARY EXAMINER